

## SEQUENCE LISTING

&lt;110&gt; GOLDBERG, EDWARD B.

&lt;120&gt; GENE AND PROTEIN SEQUENCES OF PHAGE T4 GENE 35

&lt;130&gt; 8471-007-228

&lt;140&gt; PCT/US99/13024

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&lt;160&gt; 8

&lt;170&gt; PatentIn Ver. 2.0

&lt;210&gt; 1

&lt;211&gt; 1119

&lt;212&gt; DNA

&lt;213&gt; Bacteriophage T4

&lt;400&gt; 1

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Gly	Ala	Val	Ile	Leu	Ala	Val	Glu	Ser	Glu	Val	Ile	Ala	Gly	Gln	Ser
	610					615					620				
Gln	Gln	Gly	Trp	Ala	Asn	Ala	Val	Val	Thr	Pro	Glu	Thr	Leu	His	Lys
	625					630					635				640
Lys	Thr	Ser	Thr	Asp	Gly	Arg	Ile	Gly	Leu	Ile	Glu	Ile	Ala	Thr	Gln
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Ser	Glu	Val	Asn	Thr	Gly	Thr	Asp	Tyr	Thr	Arg	Ala	Val	Thr	Pro	Lys
			660					665					670		
Thr	Leu	Asn	Asp	Arg	Arg	Ala	Thr	Glu	Ser	Leu	Ser	Gly	Ile	Ala	Glu
		675					680					685			
Ile	Ala	Thr	Gln	Val	Glu	Phe	Asp	Ala	Gly	Val	Asp	Asp	Thr	Arg	Ile
	690					695					700				
Ser	Thr	Pro	Leu	Lys	Ile	Lys	Thr	Arg	Phe	Asn	Ser	Thr	Asp	Arg	Thr
	705					710					715				720
Ser	Val	Val	Ala	Leu	Ser	Gly	Leu	Val	Glu	Ser	Gly	Thr	Leu	Trp	Asp
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His	Tyr	Thr	Leu	Asn	Ile	Leu	Glu	Ala	Asn	Glu	Thr	Gln	Arg	Gly	Thr
			740					745					750		
Leu	Arg	Val	Ala	Thr	Gln	Val	Glu	Ala	Ala	Ala	Gly	Thr	Leu	Asp	Asn
		755					760					765			
Val	Leu	Ile	Thr	Pro	Lys	Lys	Leu	Leu	Gly	Thr	Lys	Ser	Thr	Glu	Ala
	770					775					780				
Gln	Glu	Gly	Val	Ile	Lys	Val	Ala	Thr	Gln	Ser	Glu	Thr	Val	Thr	Gly
	785					790					795				800
Thr	Ser	Ala	Asn	Thr	Ala	Val	Ser	Pro	Lys	Asn	Leu	Lys	Trp	Ile	Ala
			805						810					815	
Gln	Ser	Glu	Pro	Thr	Trp	Ala	Ala	Thr	Thr	Ala	Ile	Arg	Gly	Phe	Val
			820					825					830		
Lys	Thr	Ser	Ser	Gly	Ser	Ile	Thr	Phe	Val	Gly	Asn	Asp	Thr	Val	Gly
		835					840					845			
Ser	Thr	Gln	Asp	Leu	Glu	Leu	Tyr	Glu	Lys	Asn	Ser	Tyr	Ala	Val	Ser
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Pro	Tyr	Glu	Leu	Asn	Arg	Val	Leu	Ala	Asn	Tyr	Leu	Pro	Leu	Lys	Ala
	865					870					875				880
Lys	Ala	Ala	Asp	Thr	Asn	Leu	Leu	Asp	Gly	Leu	Asp	Ser	Ser	Gln	Phe
			885						890					895	
Ile	Arg	Arg	Asp	Ile	Ala	Gln	Thr	Val	Asn	Gly	Ser	Leu	Thr	Leu	Thr
			900					905					910		
Gln	Gln	Thr	Asn	Leu	Ser	Ala	Pro	Leu	Val	Ser	Ser	Ser	Thr	Gly	Glu
		915					920						925		

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 Gly Ala Pro Thr Ser Ile Val Phe Glu Lys Gly Pro Ala Ser Gly Ala  
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 Asn Pro Ala Gln Ser Met Ser Ile Arg Val Trp Gly Asn Gln Phe Gly  
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 Thr Ser His His Phe Tyr Ser Gln Arg Asn Lys Asp Gly Asn Ile Ala  
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 Gly Asp Tyr Gly Phe Phe Ile Arg Asn Asp Ala Ser Asn Thr Tyr Phe  
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 Arg Ala Pro Thr Ser Asp Thr Val Gly Phe Trp Ser Ile Asp Ile Asn  
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 1155 1160 1165  
 Lys Thr Asn Glu Val Thr Gly Leu Pro Tyr Leu Glu Arg Gly Glu Glu  
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 Val Lys Ser Pro Gly Thr Leu Thr Gln Phe Gly Asn Thr Leu Asp Ser  
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 Leu Tyr Gln Asp Trp Ile Thr Tyr Pro Thr Pro Glu Ala Arg Thr  
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 Thr Arg Trp Thr Arg Thr Trp Gln Lys Thr Lys Asn Ser Trp Ser Ser  
 1220 1225 1230  
 Phe Val Gln Val Phe Asp Gly Gly Asn Pro Pro Gln Pro Ser Asp Ile  
 1235 1240 1245  
 Gly Ala Leu Pro Ser Asp Asn Ala Thr Met Gly Asn Leu Thr Ile Arg  
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Ser Cys Pro Leu Ser Thr Ala Gly Pro Ser Tyr Val Lys Phe Gln Asp  
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Phe  
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Gly Lys Val Asn Phe Pro Pro Glu Val Val Ser Trp Leu Arg Thr Ala  
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Gly Thr Ser Ala Phe Pro Ser Asp Ser Ile Leu Ser Arg Phe Asp Val  
50 55 60  
Ser Tyr Ala Ala Phe Tyr Thr Ser Ser Lys Arg Ala Ile Ala Leu Glu  
65 70 75 80  
His Val Lys Leu Ser Asn Arg Lys Ser Thr Asp Asp Tyr Gln Thr Ile  
85 90 95  
Leu Asp Val Val Phe Asp Ser Leu Glu Asp Val Gly Ala Thr Gly Phe  
100 105 110  
Pro Arg Arg Thr Tyr Glu Ser Val Glu Gln Phe Met Ser Ala Val Gly  
115 120 125  
Gly Thr Asn Asn Glu Ile Ala Arg Leu Pro Thr Ser Ala Ala Ile Ser  
130 135 140  
Lys Leu Ser Asp Tyr Asn Leu Ile Pro Gly Asp Val Leu Tyr Leu Lys  
145 150 155 160  
Ala Gln Leu Tyr Ala Asp Ala Asp Leu Leu Ala Leu Gly Thr Thr Asn  
165 170 175

Ile Ser Ile Arg Phe Tyr Asn Ala Ser Asn Gly Tyr Ile Ser Ser Thr  
 180 185 190  
 Gln Ala Glu Phe Thr Gly Gln Ala Gly Ser Trp Glu Leu Lys Glu Asp  
 195 200 205  
 Tyr Val Val Val Pro Glu Asn Ala Val Gly Phe Thr Ile Tyr Ala Gln  
 210 215 220  
 Arg Thr Ala Gln Ala Gly Gln Gly Gly Met Arg Asn Leu Ser Phe Ser  
 225 230 235 240  
 Glu Val Ser Arg Asn Gly Gly Ile Ser Lys Pro Ala Glu Phe Gly Val  
 245 250 255  
 Asn Gly Ile Arg Val Asn Tyr Ile Cys Glu Ser Ala Ser Pro Pro Asp  
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 Lys Ser Phe Lys Ile Tyr Ser Glu Tyr Asn Lys Pro Gln Ala Ala Asp  
 35 40 45  
 Asn Asp Phe Val Ser Lys Ala Asn Gly Gly Thr Tyr Ala Ser Lys Val  
 50 55 60  
 Thr Phe Asn Ala Gly Ile Gln Val Pro Tyr Ala Pro Asn Ile Met Ser  
 65 70 75 80  
 Pro Cys Gly Ile Tyr Gly Gly Asn Gly Asp Gly Ala Thr Phe Asp Lys  
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 Ala Asn Ile Asp Ile Val Ser Trp Tyr Gly Val Gly Phe Lys Ser Ser  
 100 105 110  
 Phe Gly Ser Thr Gly Arg Thr Val Val Ile Asn Thr Arg Asn Gly Asp  
 115 120 125  
 Ile Asn Thr Lys Gly Val Val Ser Ala Ala Gly Gln Val Arg Ser Gly  
 130 135 140  
 Ala Ala Ala Pro Ile Ala Ala Asn Asp Leu Thr Arg Lys Asp Tyr Val  
 145 150 155 160  
 Asp Gly Ala Ile Asn Thr Val Thr Ala Asn Ala Asn Ser Arg Val Leu  
 165 170 175

Arg Ser Gly Asp Thr Met Thr Gly Asn Leu Thr Ala Pro Asn Phe Phe  
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 Asp Leu Gly Phe Ala Lys Gly Gly Gln Val Asp Gly Asn Val Thr Ile  
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 65 70 75 80  
 Thr Val Asn Gly Pro Ile Gly Ser Thr Asp Gly Val Thr Gly Lys Ile  
 85 90 95  
 Phe Arg Ser Thr Gln Gly Ser Phe Tyr Ala Arg Ala Thr Asn Asp Thr  
 100 105 110  
 Ser Asn Ala His Leu Trp Phe Glu Asn Ala Asp Gly Thr Glu Arg Gly  
 115 120 125  
 Val Ile Tyr Ala Arg Pro Gln Thr Thr Thr Asp Gly Glu Ile Arg Leu  
 130 135 140  
 Arg Val Arg Gln Gly Thr Gly Ser Thr Ala Asn Ser Glu Phe Tyr Phe  
 145 150 155 160  
 Arg Ser Ile Asn Gly Gly Glu Phe Gln Ala Asn Arg Ile Leu Ala Ser  
 165 170 175  
 Asp Ser Leu Val Thr Lys Arg Ile Ala Val Asp Thr Val Ile His Asp  
 180 185 190  
 Ala Lys Ala Phe Gly Gln Tyr Asp Ser His Ser Leu Val Asn Tyr Val  
 195 200 205  
 Tyr Pro Gly Thr Gly Glu Thr Asn Gly Val Asn Tyr Leu Arg Lys Val  
 210 215 220  
 Arg Ala Lys Ser Gly Gly Thr Ile Tyr His Glu Ile Val Thr Ala Gln  
 225 230 235 240  
 Thr Gly Leu Ala Asp Glu Val Ser Trp Trp Ser Gly Asp Thr Pro Val  
 245 250 255  
 Phe Lys Leu Tyr Gly Ile Arg Asp Asp Gly Arg Met Ile Ile Arg Asn

260												265				270			
Ser	Leu	Ala 275	Leu	Gly	Thr	Phe	Thr 280	Thr	Asn	Phe	Pro	Ser 285	Ser	Asp	Tyr				
Gly	Asn 290	Val	Gly	Val	Met	Gly 295	Asp	Lys	Tyr	Leu	Val 300	Leu	Gly	Asp	Thr				
Val 305	Thr	Gly	Leu	Ser	Tyr 310	Lys	Lys	Thr	Gly	Val 315	Phe	Asp	Leu	Val	Gly 320				
Gly	Gly	Tyr	Ser	Val 325	Ala	Ser	Ile	Thr	Pro 330	Asp	Ser	Phe	Arg	Ser 335	Thr				
Arg	Lys	Gly	Ile 340	Phe	Gly	Arg	Ser	Glu 345	Asp	Gln	Gly	Ala	Thr 350	Trp	Ile				
Met	Pro	Gly 355	Thr	Asn	Ala	Ala	Leu 360	Leu	Ser	Val	Gln	Thr 365	Gln	Ala	Asp				
Asn	Asn 370	Asn	Ala	Gly	Asp	Gly 375	Gln	Thr	His	Ile	Gly 380	Tyr	Asn	Ala	Gly				
Gly 385	Lys	Met	Asn	His	Tyr 390	Phe	Arg	Gly	Thr	Gly 395	Gln	Met	Asn	Ile	Asn 400				
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Gly	Ser	Asn	Asn 420	Val	Gln	Phe	Tyr	Ala 425	Asp	Gly	Thr	Ile	Ser 430	Ser	Ile				
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Ser	Arg	Glu	Thr 500	Val	Phe	Gln	Val	Ser 505	Asp	Ser	Gln	Gly	Tyr 510	Tyr	Phe				
Tyr	Ala	His 515	Arg	Lys	Ala	Pro	Thr 520	Gly	Asp	Glu	Thr	Ile 525	Gly	Arg	Ile				
Glu	Ala 530	Gln	Phe	Ala	Gly	Asp 535	Val	Tyr	Ala	Lys	Gly 540	Ile	Ile	Ala	Asn				
Gly 545	Asn	Phe	Arg	Val	Val 550	Gly	Ser	Ser	Ala	Leu 555	Ala	Gly	Asn	Val	Thr 560				
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Tyr	Gly	Ala 595	Ile	Phe	Arg	Arg	Ser 600	Glu	Ser	Asn	Phe	Tyr 605	Ile	Ile	Pro				

Thr Asn Gln Asn Glu Gly Glu Ser Gly Asp Ile His Ser Ser Leu Arg  
610 615  
Pro Val Arg Ile Gly Leu Asn Asp Gly Met Val Gly Leu Gly Arg Asp  
625 630 635 640  
Ser Phe Ile Val Asp Gln Asn Asn Ala Leu Thr Thr Ile Asn Ser Asn  
645 650 655  
Ser Arg Ile Asn Ala Asn Phe Arg Met Gln Leu Gly Gln Ser Ala Tyr  
660 665 670  
Ile Asp Ala Glu Cys Thr Asp Ala Val Arg Pro Ala Gly Ala Gly Ser  
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Phe Ala Ser Gln Asn Asn Glu Asp Val Arg Ala Pro Phe Tyr Met Asn  
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705 710 715 720  
Tyr Val Gln Gly Asn Gly Cys Tyr Ser Leu Gly Thr Leu Ile Asn Asn  
725 730 735  
Gly Asn Phe Arg Val His Tyr His Gly Gly Gly Asp Asn Gly Ser Thr  
740 745 750  
Gly Pro Gln Thr Ala Asp Phe Gly Trp Glu Phe Ile Lys Asn Gly Asp  
755 760 765  
Phe Ile Ser Pro Arg Asp Leu Ile Ala Gly Lys Val Arg Phe Asp Arg  
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785 790 795 800  
Thr Ile Glu Ser Leu Lys Thr Asp Ile Met Ser Ser Tyr Pro Ile Gly  
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Ala Pro Ile Pro Trp Pro Ser Asp Ser Val Pro Ala Gly Phe Ala Leu  
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Met Glu Gly Gln Thr Phe Asp Lys Ser Ala Tyr Pro Lys Leu Ala Val  
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Ala Tyr Pro Ser Gly Val Ile Pro Asp Met Arg Gly Gln Thr Ile Lys  
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Gly Lys Pro Ser Gly Arg Ala Val Leu Ser Ala Glu Ala Asp Gly Val  
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Lys Ala His Ser His Ser Ala Ser Ala Ser Ser Thr Asp Leu Gly Thr  
885 890 895  
Lys Thr Thr Ser Ser Phe Asp Tyr Gly Thr Lys Gly Thr Asn Ser Thr  
900 905 910  
Gly Gly His Thr His Ser Gly Ser Gly Ser Thr Ser Thr Asn Gly Glu  
915 920 925  
His Ser His Tyr Ile Glu Ala Trp Asn Gly Thr Gly Val Gly Gly Asn  
930 935 940  
Lys Met Ser Ser Tyr Ala Ile Ser Tyr Arg Ala Gly Gly Ser Asn Thr  
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Asn Ala Ala Gly Asn His Ser His Thr Phe Ser Phe Gly Thr Ser Ser  
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Ala Gly Asp His Ser His Ser Val Gly Ile Gly Ala His Thr His Thr  
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Leu Ala  
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